

## MATERIAL SAFETY DATA SHEET

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Version 1.11

## Section 1 - Product and Company Information

Product Name HYDROCHLORIC ACID ACS REAGENT  
Product Number H7020  
Brand SIGMA

Company Sigma-Aldrich  
Street Address 3050 Spruce Street  
City, State, Zip, Country SAINT LOUIS MO 63103 US  
Technical Phone: 314 771 5765  
Emergency Phone: 414 273 3850 Ext. 5996  
Fax: 800 325 5052

## Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
HYDROCHLORIC ACID >=25%	7647-01-0	No

Ingredient Name	CAS #	Percent	SARA 313
HYDROCHLORIC ACID	7647-01-0	> 25	
WATER	7732-18-5	<= 75	No

Formula HCl  
Synonyms Acide chlorhydrique (French) \* Acido cloridrico (Italian) \* Anhydrous hydrochloric acid \* Chlorwaterstof (Dutch) \* Chlorohydric acid \* Chlorowodor (Polish) \* Chlorwasserstoff (German) \* Hydrochloride \* Hydrogen chloride (ACGIH:OSHA) \* Muriatic acid \* Spirits of salt

RTECS Number: MW4025000

## Section 3 - Hazards Identification

## EMERGENCY OVERVIEW

Toxic.

Toxic by inhalation. Causes burns. Irritating to respiratory system.

## HMIS RATING

HEALTH: 3

FLAMMABILITY: 0

REACTIVITY: 2

## NFPA RATING

HEALTH: 3

FLAMMABILITY: 0

REACTIVITY: 2

For additional information on toxicity, please refer to Section 11.

## Section 4 - First Aid Measures

## ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

#### INHALATION EXPOSURE

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

#### DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

#### EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

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### Section 5 - Fire Fighting Measures

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#### FLASH POINT

N/A

#### AUTOIGNITION TEMP

N/A

#### FLAMMABILITY

N/A

#### EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

Unsuitable: Do not use water.

#### FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific Hazard(s): Emits toxic fumes under fire conditions.

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### Section 6 - Accidental Release Measures

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#### PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

#### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

#### METHODS FOR CLEANING UP

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

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### Section 7 - Handling and Storage

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#### HANDLING

User Exposure: Do not breathe vapor. Do not get in eyes, on skin, on clothing.

#### STORAGE

Suitable: Keep tightly closed. Store in a cool dry place.

#### SPECIAL REQUIREMENTS

May develop pressure. Open carefully.

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Section 8 - Exposure Controls / PPE

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ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Government approved respirator in nonventilated areas and/or for exposure above the TLV or PEL.

Hand: Rubber gloves.

Eye: Chemical safety goggles.

Other: Faceshield (8-inch minimum).

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	Ceiling	co2 PPM
USA	MSHA Standard	Ceiling	co5 PPM (7 MG/M3)
USA	OSHA.	PEL	CL 5 PPM (7 MG/M3)
New Zealand	OEL		
Remarks: check ACGIH TLV			
USA	NIOSH	Ceiling	co5 PPM

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	5 MG/M3
Poland		NDSch	-
Poland		NDSP	7 MG/M3

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Section 9 - Physical/Chemical Properties

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Appearance Physical State: Liquid  
Color: Faintly yellow Clear  
Odor: Pungent

Property	Value	At Temperature or Pressure
Molecular Weight	36.46 AMU	
pH	N/A	
MP/MP Range	-114.2 °C	
Freezing Point	N/A -114.2 °C	
Vapor Pressure	166.991 mmHg	21.1 °C
Vapor Density	1.3 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	1.2 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	N/A	
Explosion Limits	N/A	

Flammability	N/A
Autoignition Temp	N/A
Refractive Index	N/A
Optical Rotation	N/A
Miscellaneous Data	N/A
Solubility	N/A

N/A = not available

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## Section 10 - Stability and Reactivity

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### STABILITY

Stable: Stable.

Conditions to Avoid: Do not allow water to enter container because of violent reaction.

Materials to Avoid: Bases, Amines, Alkali metals Copper, Copper alloys, Aluminum.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Hydrogen chloride gas.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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## Section 11 - Toxicological Information

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### ROUTE OF EXPOSURE

Skin Contact: Causes burns.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: Causes burns.

Inhalation: Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion: May be harmful if swallowed.

### SIGNS AND SYMPTOMS OF EXPOSURE

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema.

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

### TOXICITY DATA

Oral

Man

2.857 mg/kg

LDLO

Remarks: Vascular:BP lowering not characterized in autonomic section. Lungs, Thorax, or Respiration:Respiratory depression.

Gastrointestinal:Changes in structure or function of esophagus.

Oral

Woman

420 UL/KG

LDLO

Remarks: Behavioral:Excitement. Cardiac:Pulse rate. Kidney,

Ureter, Bladder:Hematuria.

Inhalation

Human  
1,300 ppm  
LCLO

Inhalation  
Human  
3,000 ppm  
LCLO

Inhalation  
Rat  
3,124 ppm  
LC50

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Olfaction:Other changes. Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Iritis.

Inhalation  
Mouse  
1,108 ppm  
LC50

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Other. Lungs, Thorax, or Respiration:Respiratory stimulation. Skin and Appendages:Skin: After systemic exposure: Dermatitis, other

Intraperitoneal  
Mouse  
40142 UG/KG  
LD50

Oral  
Rabbit  
900 mg/kg  
LD50

#### IRRITATION DATA

Eyes  
Rabbit  
5 mg  
30S  
Remarks: Rinsed

#### IARC CARCINOGEN LIST

Rating: Group 3

#### CHRONIC EXPOSURE - TERATOGEN

Species: Rat  
Dose: 450 MG/M3/1H  
Route of Application: Inhalation  
Exposure Time: (1D PRE)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Homeostasis

#### CHRONIC EXPOSURE - MUTAGEN

Species: Hamster  
Dose: 30 MMOL/L

Cell Type: lung  
Mutation test: Cytogenetic analysis

Species: Hamster  
Dose: 8 MMOL/L  
Cell Type: ovary  
Mutation test: Cytogenetic analysis

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## Section 12 - Ecological Information

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## Section 13 - Disposal Considerations

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### APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations.

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## Section 14 - Transport Information

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### DOT

Proper Shipping Name: Hydrochloric acid  
UN#: 1789  
Class: 8  
Packing Group: Packing Group II  
Hazard Label: Corrosive  
PIH: Not PIH

### IATA

Proper Shipping Name: Hydrochloric acid  
IATA UN Number: 1789  
Hazard Class: 8  
Packing Group: II

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## Section 15 - Regulatory Information

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### EU DIRECTIVES CLASSIFICATION

Symbol of Danger: C  
Indication of Danger: Corrosive.  
R: 34 37  
Risk Statements: Causes burns. Irritating to respiratory system.  
S: 26 36/37/39 45  
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

### US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Toxic.  
Risk Statements: Toxic by inhalation. Causes burns. Irritating to respiratory system.  
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

### UNITED STATES REGULATORY INFORMATION

SARA LISTED: No  
TSCA INVENTORY ITEM: Yes

### CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

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## Section 16 - Other Information

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### DISCLAIMER

For R&D use only. Not for drug, household or other uses.

### WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.